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AN EQUITABLE CHARGE AND PAYMENT SYSTEM FOR LEAST-COST MILK ASSEMBLY IN INDIANA

by James B. Roof
and George C. Tucker

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FARMER COOPERATIVE SERVICE
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AN EQUITABLE CHARGE AND PAYMENT SYSTEM FOR LEAST-COST MILK ASSEMBLY IN INDIANA

by James B. Roof
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This report gives the results of a study made at the request of the Associated Milk Producers, Inc., Tri-State Board of Directors. The purpose of the study is to provide guidelines to AMPI in the development of an equitable system of charging producers for hauling services and setting payments for milk assembly services performed by milk haulers.

This report presents a discussion of: (1) The need for an equitable milk hauling charge and payment system, (2) an outline of the system, (3) hauler and producer payment and charge schedules, and (4) implementation of the system.

The analysis is based on data supplied by Associated Milk Producers, the Market Administrator's Office for Federal Milk Marketing Order No. 49, and research reports on milk transportation costs.

THE NEED FOR AN EQUITABLE MILK HAULING CHARGE AND PAYMENT SYSTEM

In recent years, particularly in the Midwest, the market structure of the milk industry has changed rapidly and radically. Along with the continuing disappearance of smaller milk handlers and the increasing importance of regional and national milk processing and distribution firms, hundreds of dairy cooperatives have merged to form large regional organizations. These cooperative mergers were made largely to increase bargaining strength in negotiations with large handlers and to take advantage of economies of scale in the operation of manufacturing and Grade A surplus handling facilities.

Farm to plant milk hauling, however, has largely remained in the hands of small scale independent truckers. While in most cases regional cooperatives have assumed the function of collecting hauling charges from producers and making payments to haulers, the development of routes and setting of rates to producers remains a matter of competition between haulers and negotiation between haulers and producers. Many routes were first organized during the shift from can to bulk hauling, often under the sponsorship of a dealer anxious to complete the transition to all bulk assembly. Routes developed individually over many years have tended to overlap as bulk milk haulers strove to gain clients among farmers shifting gradually to bulk handling. Can routes were also overlapping and at times deliveries were made from one can truck to more than one handler. Unless separate compartments are used, commingling of milk on bulk tank trucks prevents assignment of specific producers' milk to different handlers on one route. This has compounded the problems of cross hauling and route overlapping. This has left the farmer wondering "Why are so many tank trucks going by my farm?" These inefficiencies are reflected both in excessive hauling charges to producers and inadequate returns to the haulers for their services.

Of equal importance is the fact that cooperatives may have difficulty in directing supplies to markets where producer returns can be maximized or in rerouting supplies to support bargaining efforts with handlers. During the transition to bulk handling many handlers paid premiums to producers to encourage rapid shifts away from cans. Also, handlers in some areas use hauling subsidies rather than price incentives as a means to obtain supplies for their operations. Many haulers perform special services for favored producers in order to insure continued patronage. These practices have tended to develop producer loyalty and identification with particular haulers and handlers and some may oppose shifts to other haulers or handlers.

The emerging large regional dairy cooperatives are assuming an ever greater role in the marketing of member's milk. Cooperatives handle member payrolls, verify weights and tests, allocate supplies to different markets for maximum member returns, and operate surplus manufacturing plants as a service both to members and handlers. Recognizing that from ten to thirty percent of producers' cash expenses are paid out for farm to plant hauling, cooperatives are seeking methods to increase hauling efficiency, not only as a means to lower members' costs but also to gain needed flexibility in moving supplies.

To make necessary changes in route organization, we believe cooperatives must completely assume responsibility for establishing assembly routes and instructing haulers as to pickup and delivery destinations. Prior to this the cooperative must establish a uniform schedule of equitable producer hauling rates that reflect the relative average cost of assembling and moving individual producers' milk. A schedule of payments for haulers is also required which reflects the relative cost of services they are asked to perform. Later, the savings from route reorganization requiring less hauling service would automatically accrue to a hauling pool and permit reduction in producer rates.

The concept of equity used in establishing rates implies that any producer in a region (say, the state of Indiana) with a given daily volume of deliveries and pick-up schedule, and located a given distance from a market would pay the same as any other producer with similar volume of milk, pick-up schedule and distance from market. Haulers would be treated similarly within the region. For example all haulers with the same size truck, number of pick ups and route length would be paid the same with variations based on the relative average cost to them of the services they perform.

We believe that a uniform system of charges and payments based on relative costs and equitable treatment would cause less friction between and among members and haulers and have a greater chance for acceptance than any method which allows for individual negotiation.

AN OUTLINE OF THE CHARGE AND PAYMENT SYSTEM

In our previous discussion it will be noted that we used the term relative average costs rather than actual costs. In our analysis of milk hauling in Indiana it was not possible to determine the actual costs incurred by each of several hundred routes. However, data were available from research publications on costs of operating farm to plant bulk tank trucks. Additional data were available from a sample of 75 Indiana routes detailing time and mileage used in performing various assembly functions.[1] The total revenue paid by all farmers for hauling services in the marketing area was available from the market administrator. Therefore, it was only necessary to estimate the number of routes in the marketing area to determine the daily revenue available for an average route.

Data for Indiana were analyzed for June and December 1970. Because of major differences in route structure, mostly the difference between farms on an average route, data for the Wisconsin region of supplies for the Indiana market were analyzed separately.

Indiana data revealed daily payments of $10,963.48 for hauling 3,735,264 pounds of milk. Based on the 75 route sample, the average route used a 3,000 gallon capacity truck, and carried 20,792 pounds. Therefore, we estimated that there were 179.64 loads or routes operated per day. These routes, then, received $61.03 per load as producer payments.

Hauling costs can be broken into 3 major categories: Labor; fixed costs, including depreciation, insurance, licenses and taxes and overhead; and operating costs, including gas, oil, tires, and repairs. Using this breakdown and applying data from the 75 route sample and other studies provides the following allocation of costs:

Daily Costs of Average Indiana Route	Dollars	Percent of total costs
Labor--$3.25 per hour or 5.417 cents per minute x 473.7 minutes on average route	$25.66	39.19%
Fixed costs--58 cents per day per hundred gallon tank capacity (3,000 gallons)	17.40	26.58
Operating costs--61.4 miles transport x 12.5 cents per mile + 78.4 assembly miles x 18.8 cents per mile or 16.03 cents for all miles	22.41	34.23
Total	$65.47	100.00%

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[1] See appendix for examples of questionnaires used.

Note that we have assigned a 50 percent higher operating cost for assembly miles (first farm to last farm) than for transport miles (plant to first farm and last farm to plant). Thus, operating costs are a weighted average cost for all miles.

Calculated costs are $65.47 or $4.44 more than estimated average daily Indiana area route payments of $61.03. In the development and implementation of this system we will use the higher calculated costs since we believe this more truly reflects a reasonable payment for route operations. While this might result in very slightly higher costs to some producers, we believe that economies from route consolidation and the use of larger trucks would soon reduce average route costs to a figure equal to or lower than $61.03 estimated payments now made.

One of the principal analyses described in this report is the method used to equitably charge this average daily route cost back to producers on the route and to develop a schedule of payments reflecting varying distances from the market. To do so we perform the following steps--essentially a matter of slicing the $65.47 pie in a manner that reflects reasonable value for collecting the individual producer's milk:

1. Allocate fixed route costs to components of route operations,
2. Establish unit costs of route operations; labor, mileage, and volume,
3. Allocate these unit costs to the origins of costs; farm stop charges, variable costs related to farm to market mileage, and volume and from this,
4. Derive unit costs chargeable to the farmer related to the stop, his distance from market, and his volume.

We first allocated fixed costs equally to each of three components of route operation; total time on the route, total route mileage, and total volume of milk transported. Thus:

$17.40 daily fixed costs per average truck ÷ 3 = $5.80.
Time: $5.80 ÷ 473.7 minutes per average route = $.0122 per minute.
Mileage: $5.80 ÷ 139.8 average total route mileage = $.0415 per mile.
Volume: $5.80 ÷ 207.92 average hundredweight = $.0279 per cwt.

Unit Costs of Route Operations

Labor and share of fixed costs, $25.66 ÷ 473.7 minutes = $.0542 per minute + .0122 fixed costs per minute = $.0664 per minute.
Mileage and share of fixed costs, $22.41 ÷ 139.8 = $.1603 per mile + .0415 fixed costs per mile = $.2018 per mile.
Volume, at 207.92 cwt. = $.0279 per cwt.

A major step in constructing a producer charge schedule is determining the origin of costs. To do this we divided costs into two groups; stop charge costs to be shared equally among all producers on a route and variable costs distributed on the basis of volume and/or distance.

We believe there are two operations which should be classed as stop charge costs. They are: (1) On the farm costs less pumping time, and (2) between farm assembly costs. Time on the farm less pumping time is relatively constant and not related to volume or distance. If the hauler performs an additional service such as washing and sanitizing the bulk tank, an additional fee can be levied.

While the time used in driving between farms may vary from one route to another the amount of time is not related to an individual producer's volume or his distance from market. Driving time between farms depends on the density of producers and whether consecutive producers are assigned to the same route. Producers located more distant from markets may be grouped as densely as close in producers. Density of producers in an area influences the cost of assembly as will be shown later when Wisconsin area producers' costs are developed.

Presence of large volume producers tends to reduce the number of stops per load and the total miles and time needed to assemble a tank load of milk. If between farm assembly costs were allocated to volume, large volume producers would pay the greater part of route costs for which they make the least contribution.

Cost distribution for the average Indiana route (load) on the basis of cost origin was:

Stop Charge Costs

On farm labor and share of fixed costs	
108.9 minutes x $0.0664 per minute	$ 7.29
Between farm labor and share of fixed costs	
143.3 minutes (driving time) x $0.0664 per minute + truck operating cost and share of fixed costs	9.62
Between farm costs	
78.4 miles x $0.2018 per mile	15.82
Total stop charge costs	32.63

Variable Costs Related to Transport Mileage

Labor and share of fixed costs	
108.4 minutes (transport driving time) x $.0664	7.20
Truck operating costs and share of fixed costs	
61.4 miles x $.2018 per mile	11.55
Total	19.59

Volume

Labor and share of fixed costs (includes time for farm and plant pumping, truck tank washing, and waiting at plant)	
112.2 minutes x $.0664 per minute	7.45
Fixed costs allocated to volume	
207.92 cwt. x $.0260 per cwt.	5.80
Total	13.25
Grand total	$65.47

This cost distribution provides the following cost factors used in developing hauler and producer hauling rates:

Stop charge costs per farm--including on farm labor less pumping time and between farm labor, fixed, and operating costs, $32.63 ÷ 11.2 stops on the average route = $2.91 per stop.

Variable transport mileage costs--$19.59 total variable transport costs ÷ 61.4 transport miles on the average route = 31.9 cents per mile.

Volume costs--$13.25 ÷ 207.92 cwt. = 6.37 cents per cwt.

Wisconsin Hauling Costs

Almost 25 percent of the supply of milk for the Indiana Order comes from Wisconsin area producers qualified on the market. Due in part to Wisconsin's specialization in dairying, producers are more densely spaced on pick-up routes and haulers used larger capacity trucks. Farms were 3 miles apart on an average route compared to 7 in Indiana while the average truck had 3,500 gallons capacity with 3,000 in Indiana. For this reason we developed separate cost functions for the Wisconsin area, using the same methodology described earlier.

Data for Wisconsin, including labor rates, per mile operating costs, and fixed costs per hundred gallon capacity of trucks were assumed as the same as Indiana. Differences were found in time on route, transport miles, and truck sizes. In developing costs we used data supplies by AMPI management on Wisconsin area routes.

Estimates for Wisconsin showed an average of 499.7 farm stops per day. Trucks were estimated to make 10 stops per day resulting in 50 routes being in operation. This compared with data showing production of 1,201,053 pounds per day; with each truck operating at 80 percent capacity and carrying an estimated average of 24,030 pounds, 50 routes would be in operation.

Since the market administrator's data on hauling payments combined payments for farm to reload point hauling with over-the-road costs, we had to calculate daily average total route receipts. However, a small sample of routes in one area showed average daily payments of $50.05. This compared closely with calculated payments of $50.75 shown below.

Daily Costs of Average Wisconsin Route

Labor--$3.25 per hour or .0542 per minute x 325.2 minutes total route time	$17.62
Fixed costs for 3,500 gallon tanker including depreciation, insurance, license and taxes, and overhead, 58 cents per hundred gallon capacity	20.30
Variable costs at 18.59 cents per mile x 69 total route miles (note higher variable cost for the larger truck used in Wisconsin).	12.83
Total	$50.75

Proceeding as we did for Indiana routes, fixed costs were divided equally between time, volume and mileage.

$20.30 ÷ 3 = $6.766.
Time: 6.766 ÷ 325.2 minutes = $.0208 per minute.
Mileage: 6.766 ÷ 69 miles = .0980 per mile.
Volume: 6.766 ÷ 240.30 cwt. volume = .0281 per cwt.

Unit costs of operations, thus, were:

Labor and share of fixed costs--$0.0542 + $0.0208 = $.075 per minute.
Mileage and share of fixed costs--$0.1859 + $0.0980 = $.2839 per mile.
Volume share of fixed costs = $.0281 per cwt.

The cost distribution for Wisconsin routes follows.

Stop Charge Costs

On farm labor less pumping time and share of fixed costs	
97 minutes x $.075 per minute	$ 7.28
Between farm labor and share of fixed costs	
49.1 minutes (driving time) x .075 per minute	3.68
Between farm truck operating costs and share of fixed costs	
27 minutes x $.2839 per mile	7.67
Total	18.63

Variable Costs Related to Transport Mileage

Labor and share of fixed costs	
59.3 minutes (transport driving time) x $.075 per minute	4.45
Truck operating costs and share of fixed costs	
42 miles x $.2839	11.93
Total	16.38

Volume

Labor and share of fixed costs (time for farm and plant pumping, truck tank washing and waiting at plant)	
119.8 minutes x $.075	8.99
Fixed volume costs	
240.30 cwt. x .0281	6.75
Total	15.74
Grand total	$50.75

The Wisconsin cost distribution provides these unit costs for establishing producer hauling rates.

Stop Charge Costs per Farm

Including on farm and between farm labor, fixed and operating costs, $18.62 ÷ 10 stops = $1.86 per stop.

Variable Transport Mileage Costs

$16.38 total variable costs ÷ 42 miles transport to plant = $.29 per mile.

Volume Costs

$15.73 ÷ 240.30 cwt. = .0654 per cwt.

PRODUCER LOCATIONS

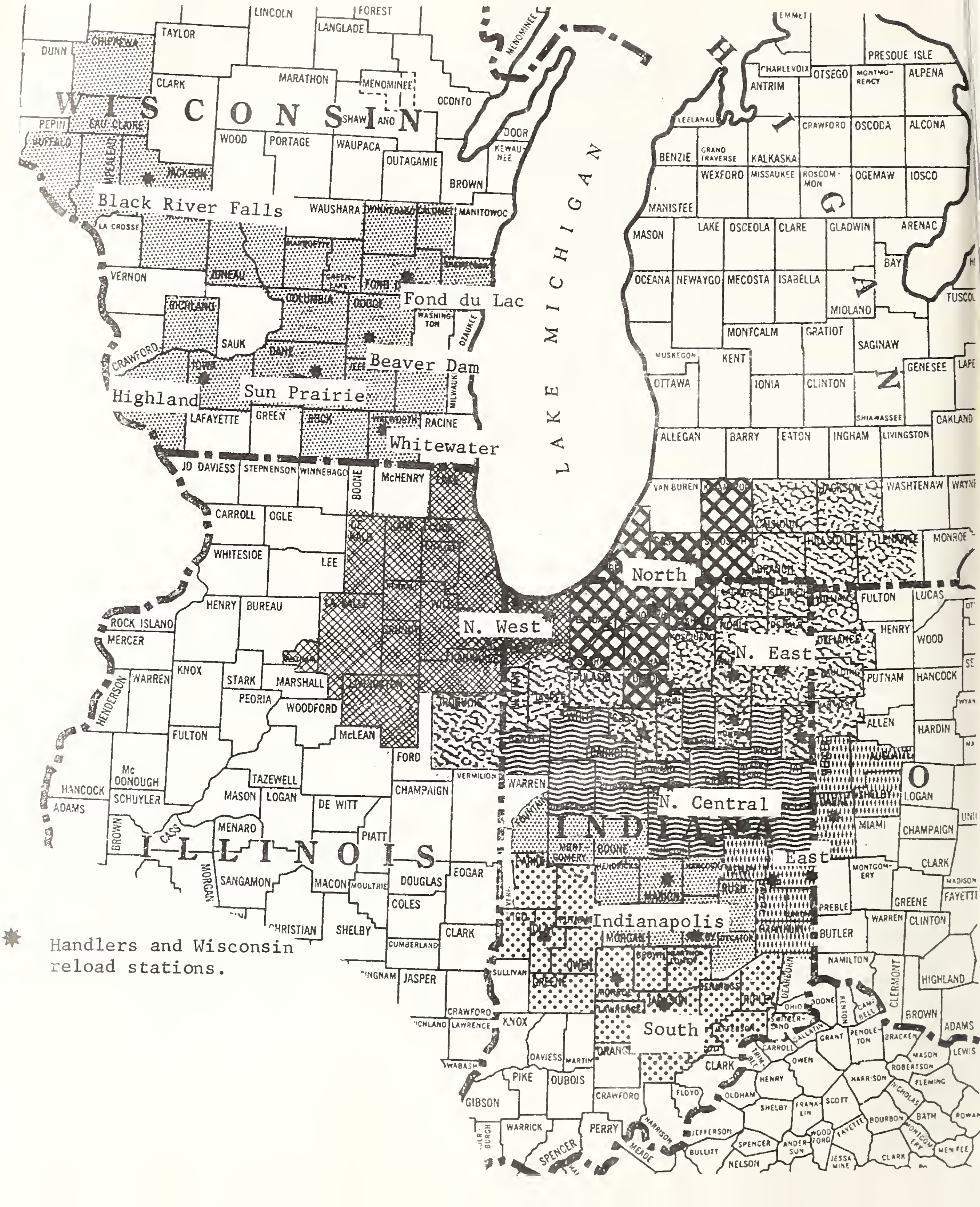
A most important consideration in the development of this system is the determination of a producers mileage from his farm to the market. It should be kept in mind that if the cooperative assumes the function of assigning destinations to haulers, in order to meet market committments producers may have their milk sent to a variety of markets at varying distances from their farms. Calculation of a new producer hauling charge with each change in destination would be burdensome and inequitable.

We believe that it is more equitable for each producer to have his hauling computed at the lowest alternative rate, which would generally be the rate to the nearest fluid milk market outlet. If a significant portion of the milk produced nearest that outlet should not be needed locally, then all producers nearest the outlet with a surplus should share in the costs of transporting that milk to the next closest fluid milk outlet where it is needed. The method of charging for this extra cost will be shown later.

Applying data from the market administrator on milk produced in each county we determined the milkshed for each outlet consisting of those counties geographically closest to the outlet. Indiana has a number of dealers scattered throughout the marketing area. To avoid problems of disclosure and simplify calculations we grouped 3 or more plants together as one outlet. The Indiana Federal Order applies varying location differentials to plants lying north of Indianapolis. These differentials were written in the market order to make it more attractive for producers to ship milk to Indianapolis where most supplies were needed. We considered that the decrease of 4¢ per hundred in pay price between zones was equivalent to adding 20 miles distance. In areas north of Indianapolis all plants within a particular differential zone were grouped together. Taking the artificial distance effect of location differentials into account, we then established those counties "nearest" as a supply area for a market group of outlets. The market groupings and closest supplies are shown in figure 1.

To compute distances we used county seats in most instances as being representative of the average producer location point. Cooperative management may wish to use actual producer mileage where member locations are readily available on maps.

Figure 1.--Indiana Federal order market groups and closest county supplies, June and December, 1970



Our next calculation was to determine total and weighted average hundredweight miles of milk movement from closest counties to market groups. This was simply the sum of the product of each county's road mileage to nearest market times the county's production in the two-month period. This equaled 43,797,152 hundredweight miles. When divided by total production of 2,278,511 cwt. we arrived at the weighted average distance milk had to move to market, or 19.22 miles.

Supplies in each of the supply areas were then compared with demand of their respective market outlet groups. We have defined demand in a different manner than the usual connotation of market Class I plus Class II requirements. In this system we assumed that producers in each supply area should be responsible for supplying market outlets in that area with their Class I needs plus the average excess over Class I experienced by all outlets in the total market, in this case, all handlers regulated by the Indiana Order. Table 1, column 5 shows the percent that supplies in counties closest to a market group of outlets were of that area's Class I usage plus average surplus. Three of the eight market groups had nearby supplies in excess of the Class I demand plus average surplus.

Among the three market groups with excess supplies we determined that producers closest to the northeast market group could supply their excess milk to shortage outlets at little or no additional cost. Referring to figure 1, it can be seen that producers located in southern Cass and Miami counties could ship milk to the short north central outlet thus removing the northeast area's relatively small quantity of surplus. There are also a number of manufacturing plants in the northeast area suggesting that the cooperative could move surplus supplies to these outlets at no additional cost.

The southern market group's closest counties produced 6,813,197 more milk than needed in the two-month period. Using a cost of 2 cents per hundredweight for each 10 miles we estimated the additional alternative hauling cost to Indianapolis from those counties in the northern part of the southern market group and closest to Indianapolis. The counties with the lowest additional cost which could, together, supply the required milk to Indianapolis were Parke, Putnam, Monroe and Bartholomew counties. The total additional cost needed to move 6,813,197 pounds of excess supplies in the two-month period was $4,473.41. This cost divided by total southern area production of about 22 million pounds in the two-months time period would be 2 cents per hundred to all producers in the area.

Thus, if each producer in the southern group paid 2 cents per hundredweight more than the basic rate, he would have the benefits of least-cost hauling to his nearest market and yet share equitably in the burden of moving unneeded supplies to markets where it was needed. If the cost were not shared by all producers, those producers in the 4 counties whose milk was reallocated to Indianapolis would have to pay an additional 6 to 7 cents per hundred.

Table 1.--Class I demand, average surpluses (marketwide), closest producer supplies, and closest supplies as a percentage of Class I demand plus average surplus, for specified fluid market outlet groups, June and December, 1970

Fluid market outlet groups	Class I demand	Average surplus 1/	Class I demand plus surplus	Closest producer supplies	Supplies as % of Class I plus surplus
	Pounds				Percent
Northwest	18,538,435	7,508,386	26,046,821	22,644,668	86.9
North	33,823,347	15,452,737	49,276,084	47,175,510	95.7
Northeast	36,547,118	19,989,162	56,536,280	61,631,630	109.0
East	12,862,003	4,918,916	17,780,919	15,104,107	84.9
North Central	25,017,202	10,452,482	35,469,684	32,025,329	90.3
Indianapolis	67,953,058	8,954,797	76,907,855	27,355,746	35.6
South	7,915,287	7,185,581	15,100,868	21,914,065	145.1
Wisconsin	2/ 0	23,996,872	23,996,872	73,264,257	305.3
Totals	202,656,450	98,458,933	301,115,383	301,115,379	--

1/ Weighted average surplus for 2 months, June and December. Average surplus = 32.7 percent.

2/ There are no fluid bottling plants in Wisconsin qualified under the Indiana Order.

Wisconsin area producers qualifying on the Indiana market had, of course, to move a large quantity of milk to the shortage fluid market outlet in Indianapolis. The procedure for establishing an equitable hauling charge for these producers was handled the same way.

We first allocated closest supplies to each of the 6 reload points in use during the study period. These were at Black River Falls, Highland, Sun Prarie, Beaver Dam, Fond du Lac, and Whitewater. Each station was allocated its share of supplies to move to Indianapolis. Since no Wisconsin area milk was bottled there, the quantity to be left in Wisconsin for local manufacturing was the total markets average percentage not used in Class I--the average surplus.

We then calculated the mileage to Indianapolis from each point and estimated the cost of shipping the milk based on a USDA study of over-the-road hauling costs.1/ Wisconsin producers were obligated to ship 49,267,387 pounds during the two-month period. Together with a 2¢ per cwt. pump-over charge for the reload stations, the weighted average cost for shipments from the 6 points was 53.27 cents per cwt., for a total cost of $262,366.80. This cost when prorated over the 73.2 million pounds produced in the Wisconsin area was 36 cents per cwt., to be added to the producers basic hauling charge schedule.

Management might wish to assign separate out of market hauling charges to each reload point. This can be done easily by dividing total hauling costs from each reload point by their respective area's milk supplies. These charges would range from 43.2 cents from Black River Falls to 32.1 cents from Whitewater. However, by applying a uniform out of market shipping charge in the entire Wisconsin area, management could further reduce the average charge by shipping the bulk of needed supplies from reload points closest to Indiana such as Sun Prarie, Whitewater and Beaver Dam. Only enough milk from Highland, Fond du Lac and Black River Falls would move to supply peak demand and maintain pool qualification. All Wisconsin producers should share equally in costs of out-of-area shipments where this system is used.

It should be noted that, under this system, the amount of milk that producers in a surplus area are equitably obligated to ship and for which they are charged, does not have to coincide with the quantity actually transferred. Referring to table 1, it is seen that Indianapolis required 67,953,058 pounds of milk for Class I purposes for the two-month period, with only 27,355,746 total pounds provided by producers closest to Indianapolis. The Class I needs which would have been physically shipped from Wisconsin, then, would be 40,597,312 pounds (67,953,058 less 27,355,726).

1/ Over the Road Costs of Hauling Bulk Milk, Marketing Research Report no. 919, Economic Research Service, USDA, see p. 13.

This is 8,670,075 pounds less than Wisconsin area producers were obligated to ship. If no additional milk from Wisconsin was required for reserve supplies or Class II usage, an additional $46,000 would accrue to the hauling pool. Under this system the cooperative is free to transfer milk supplies from one area to another in the most rational and lowest cost method available, with savings allocated back to all participants in the hauling pool.

HAULER AND PRODUCER PAYMENT AND CHARGE SCHEDULES

Summarizing our earlier analyses, we have determined the following unit hauling cost factors needed to construct producer hauling charge schedules.

	Indiana basic	Southern Indiana	Wisconsin
Farm stop charge	\$2.91	\$2.91	\$1.86
Volume charge, costs per cwt.	6.37¢	6.37¢	6.54¢
Surplus milk movement charge, cents per cwt.	--	2¢	36¢

The remaining cost factor which needs to be considered is the mileage portion. In order to arrive at these costs, we first need to develop the hauler payment schedule. In brief, producer charges are based on the transport mileage cost of the average size truck. This average route's truck costs on the farm and between farms is paid for by the producer in his farm stop charge. Volume costs are paid by the producer equal to the amount paid haulers. Therefore, the producer's volume-mileage payment is the volume charge plus transport mileage costs. This is shown diagramatically below.

Producer payments	Route costs	Hauler payments
Stop charge payment	On farm labor less pump time and share of fixed costs	Stop payment
	Between farm driving costs, labor, and share of fixed costs	Route mileage payment
Mileage payment	Transport (plant to first farm, last farm to plant) driving costs, labor, and share of fixed costs	
Volume payment	Farm and plant pump time, waiting at plant, truck tank cleanup	Volume payment

In the development of a system of payments for other size trucks, we used the same between farm miles and volume picked up per producer as shown by the route survey. For example, while the average size truck with 3,000 gallon capacity made 11.2 stops, or 18.52 cwt. per producer, the smaller 2,500 gallon truck, operating also at 80 percent capacity, made only 9.3 stops. With an average of 7 assembly miles per stop, the assembly portion was 65.1 miles for the smaller truck as against 78.4 miles for the larger. Daily fixed costs per truck were 58 cents per hundred gallon capacity. Table 2 illustrates daily mileage for varous size trucks.

In table 2 for each size truck, we have shown the assembly costs the truck would incur and the per mile cost of the transport segment of a total route. In table 3 for each route length and truck size, we determined the portion of mileage used as transport. This is the total route length less the miles used in assembly. Transport miles are multiplied by transport costs per mile to arrive at transport costs for each length route. When this cost is added to assembly costs and divided by the total route length, we arrived at the average per mile driving cost for each size of truck.

Similar calculations were made for Wisconsin area routes which produced driving costs almost the same as for Indiana routes. When taken together and divided into route mileage zones, we arrived at a hauler payment schedule, table 4.

In addition to mileage payments haulers would receive the following payments:

Indiana area: 65¢ per stop plus 6.4¢ per cwt. load.
Wisconsin area: 73¢ per stop plus 6.5¢ per cwt. load.

The producer charge schedule is derived directly from table 3 shown previously, with the exception that daily fixed costs allocated to mileage are prorated to the proportionate share of route mileage classified as transport mileage. For the hauler payments schedule, it was only necessary to add fixed driving costs to total variable costs for all mileage to arrive at per mile driving costs.

For both the Indiana and Wisconsin area we selected the transport driving costs that corresponded to the average size truck used for hauling in the respective area. These costs were divided by the hundredweight carried by the truck and spread alongside the appropriate farm to market miles to develop a producer payment schedule. Farm to market distance is one-half of transport route miles. This calculation is shown in table 5.

Similar calculations were performed using Wisconsin area data. Although the average truck used was larger, when the higher per mile driving cost was divided by more hundredweight carried, similar results were obtained for comparable farm to market mileages.

Table 2.--Daily mileage costs, specified trucks and mileages, Indiana region

Cost factor	Capacity; gallons			
	2,500	3,000	3,500	5,000
1. Hundredweight load, 80% capacity	172.9	207.4	242	345.7
2. Number of stops	9.3	11.2	13.1	18.7
3. Average assembly miles @ 7 per stop	65.1	78.4	91.7	130.9
4. Assembly driving time @ 12.8 min. per stop	118.9	143.3	167.5	239.2
5. Assembly miles operating cost per mile	16.8¢	18.8¢	20.6¢	25.7¢
6. Labor cost, 5.42¢ per min. (x line 4)	$6.44	$7.76	$9.07	$12.96
7. Operating cost (line 5 x line 3)	10.93	14.74	18.89	33.64
8. Assembly variable cost	$17.37	$22.50	$27.96	$46.60
9. Fixed cost allocated to driving	7.20	8.90	10.61	15.71
10. Total assembly costs	$24.57	$31.14	$38.57	$62.35
11. Transport operating costs per mile	11.2¢	12.5¢	13.7¢	17.1¢
12. Labor costs per mile	9.6¢	9.6¢	9.6¢	9.6¢
13. Total transport costs per mile	20.8¢	22.1¢	23.3¢	26.7¢

Table 3.--Average per mile driving cost, specified truck sizes and mileage

Daily total route miles	Farm assembly trucks capacity; gallons							
	2,500		3,000		3,500		5,000	
	Transport							
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
50	[1] 0	0	0	0	0	0	0	0
100	34.9	$ 7.26	21.6	$ 4.77	8.3	$ 1.93	0	0
150	84.9	17.66	71.6	15.82	58.3	13.58	19.1	$ 5.10
200	134.9	28.06	121.6	26.87	108.3	25.23	69.1	18.45
250	184.9	38.46	171.6	37.92	158.3	36.88	119.1	31.80
300	234.9	46.86	221.6	48.97	208.3	48.53	169.1	45.15
Add total assembly mileage cost		$17.37		$22.50		$27.96		$46.60
	Cents per mile, driving cost							
50		[1] 0		[1] 0		[1] 0		[1] 0
100		31.8		35.9		40.5		[1] 0
150		28.2		31.3		34.8		45.0
200		26.3		29.0		31.9		40.4
250		25.2		27.6		30.2		37.7
300		24.5		26.7		29.0		35.8

---

[1] No costs are shown for 50-mile routes and a 100-mile route for 5,000 gallon trucks since assembly miles exceed these mileages. Costs for Wisconsin trucks which had shorter assembly routes were used to develop the hauler payment schedule for 50-mile routes shown in table 5.

Table 4.--Schedule of mileage payments to haulers, specified truck sizes and route miles

Route miles	Gallons of truck capacity			
	2,500	3,000	3,500	5,000
	Cents per route mile			
0 - 24.9	46.0	54.0	--	--
25 - 49.9	42.0	48.0	53.5	71.5
50 - 74.9	35.5	40.0	45.5	62.5
75 - 99.9	33.0	36.5	41.5	53.0
100 - 124.9	31.0	34.5	38.5	48.0
125 - 149.9	29.5	32.5	36.0	45.5
150 - 174.9	28.0	31.0	34.0	43.0
175 - 199.9	27.0	29.5	32.5	41.0
200 - 224.9	26.5	29.0	31.5	39.5
225 - 249.9	26.0	28.0	31.0	38.0
250 - 274.9	25.5	27.5	30.0	37.0
275 - 299.9	25.0	27.0	29.5	36.0
300 - +	24.5	26.5	29.0	35.5

Table 5.--Producer payment calculations, as derived from hauler payment schedule (table 4), specified farm to market miles

Route length	Transport route miles	Farm to market distance in miles	Labor & operating costs/ mile	Labor and operating cost	Plus $3.90 fixed costs 1/	Divide by 207.4 cwt. load	Plus volume charge per cwt.	Total producer charge per cwt.
50	0	0	22.1¢	0	0	0	6.37¢	0
100	21.6	10.8	22.1	$ 4.77	8.67	4.18¢	6.37	10.55¢
150	71.6	35.8	22.1	15.82	19.72	9.50	6.37	15.87
200	121.6	60.8	22.1	26.87	30.77	14.84	6.37	22.21
250	171.6	85.8	22.1	37.92	41.82	20.16	6.37	26.53
300	221.6	110.8	22.1	48.97	52.87	25.49	6.37	31.86

1/ Fixed cost allocated to mileage, 3,000 gallon tank truck, 4.15 cents per mile. 4.15 cents x transport mileage, 61.4 miles = 2.55. Fixed cost allocated to time, 1.22 cents per minute. 1.22 cents per minute x 108.4 minutes driving time = $1.32. Total fixed costs allocated to transport time and mileage = $3.87 rounded up to $3.90.

The basic producer hauling charge schedule is shown in table 6 along with charges for producers in southern Indiana and Wisconsin which includes their out of market surplus hauling charges.

The following tabulation compares estimated revenue from producer payments, applying rates shown in table 6, with estimated hauler payments for the two-month study period.

From Producers

Mileage volume payments	$417,903	
Stop charges, 136,277 stops x $2.91 (Indiana)	396,566	
30,486 x $1.86 (Wisconsin)	56,704	
Total revenue for hauling from producers		$871,173

To Haulers

Indiana, 179.64 routes x 139.8 miles x 32.5 cents per mile x 61 days	$497,878	
136,277 stops x 65 cents per stop	88,580	
2,278,511 cwt. x 6.4 cents per cwt.	145,825	
Wisconsin 50 routes x 69 miles x 45.5 cents per mile x 61 days	95,755	
30,486 stops x 73 cents per stop	22,255	
732,642 cwt. x 6.5 cents per cwt.	47,622	
Total payments to haulers		$897,915
Difference		$26,742

These estimates are only approximations of revenue and payments. An adjustment of 1 cent per hundred addition to the basic volume change would yield an additional $30,100 to cover the deficit. However, we believe that cooperative management could quickly lower hauler payment requirements through route reorganization and other economies. A portion of the additional revenue required would also be obtained from the surplus market charges of 2¢ in the southern Indiana market group and 36 cents in Wisconsin.

The surplus movement charges would yield an additional $226,940 needed to move milk from market groups with surplus supplies to the short Indianapolis market group. As we described earlier, actual payment for service by haulers would be somewhat lower depending on requirements for reserves and Class II.

Table 6.--Producer charge schedule, specified farm-to-market distances

Farm to market miles	Basic charge	Southern Indiana	Wisconsin area
	Cents per hundredweight		
0 - 15	12.0	14.0	48.0
16 - 19.9	12.5	14.5	48.5
20 - 24.9	13.5	15.5	49.5
25 - 29.9	14.5	16.5	50.5
30 - 34.9	15.5	17.5	51.5
35 - 39.9	16.6	18.5	52.5
40 - 49.9	18.0	20.0	54.0
50 - 59.9	20.0	22.0	56.0
60 - 69.9	22.5	24.5	58.5
70 - 79.9	24.5	26.5	60.5
80 - 89.9	26.5	28.5	62.5
90 - 99.9	29.0	31.0	65.0
100 - 109.0	31.0	33.0	67.0
110 - 119.9	33.0	35.0	69.0
120 - 129.9	35.5	37.5	71.5
130 - 139.9	37.5	39.5	73.5
140 - 149.9	39.5	41.5	75.5
Plus stop charge	$2.91	$2.91	$1.86

There would be a need for management of the hauling pool to periodically review producer supplies and Class I sales within each of the areas associated with a market group. Changes in the relationship between supplies and Class I sales would alter the obligation of producers within an area to ship supplies not needed locally to other markets, thus requiring changes in producer payment rates for moving these supplies. Such review could occur annually based on the previous year's performance or whenever a major change took place, such as a plant closing.

IMPLEMENTING THE HAULING SYSTEM

It should be remembered that this report only describes a method to equitably establish hauling payments from producers according to the cost of hauling in the area. For members to benefit from the system, pickup routes and intermarket movements of milk supplies would have to be reorganized. Potential benefits are illustrated in the companion report by Purdue University which demonstrates a least-cost hauling system. Application of our method of determining charges and payments to a reorganized least-cost hauling structure would provide a hauling payment schedule with lower stop charges and mileage-volume payments than shown in this report. This is illustrated, for example, by the difference between the Wisconsin area and Indiana.

We recognize that the use of this system would constitute a revolutionary change in milk marketing. We also note that four cooperatives and a large number of non-members are marketing milk in the Indiana Order area. Often milk from members, non-members and different cooperatives is intermingled on one route. While any one cooperative could initiate the use of this system, for maximum benefits, as many producers as possible should participate to eliminate cross hauling and excessive inter-market supply movements. There is a need for careful planning and coordination among cooperatives.

Since producers do not pay haulers directly for hauling services, it would seem logical for participating cooperatives to manage hauling with a separate agency or hauling pool. This could be similar to the super pool used in the Chicago regional order for over-order premiums. The pool could be administered either by one of the participating cooperatives or independently. Whether or not the system includes cooperatives or producers in addition to AMPI members, some form of separate accounting for hauling revenues through a separate pool is essential. Hauling revenues should be obtained which exceed payments to haulers. At the end of the accounting period excess revenues could be allocated from the pool back to producers, perhaps most equitably on the basis of producer payments.

Cooperatives and/or their members may not readily accept the concept of a stop charge which fully reflects on farm and between farm assembly costs. Through our discussions with cooperatives we are aware of a concern for the stop charge burden on low-volume members. Cooperatives may wish to spread a portion of this cost on a volume basis, with volume discounts for large volume producers. In our study we did not obtain data on individual producer volume and so cannot offer a mathematically accurate alternative which would obtain adequate revenue to pay haulers. However, the following examples will illustrate the dampening effect on small volume producers by shifting part of the stop charge to a volume discount.

In the first illustration, 3 producers in Indiana located 50 miles from their closest market had hauling costs ranging from 49.1¢ per cwt. for producer A to 25.8¢ for producer C.

Producer	Volume per delivery	Stop charge	Volume charge	Mileage charge	Volume--mileage charge	Revenue	Total cost per cwt.
A	1,000 lbs.	$2.91	6.4¢	13.6¢	20¢	4.91	49.1¢
B	2,500	2.91	6.4	13.6	20	7.91	31.6
C	5,000	2.91	6.4	13.6	20	12.91	25.8
Total	8,500 lbs.					25.73	

In the second illustration, the stop charge is reduced to $1 with the difference applied in the volume charge. However, the burden on A is reduced by 10 cents per cwt. to 39.1 cents and added to C whose cost increases from 25.8 to 27.6 cents.

Producer	Volume	Stop charge	Volume charge	Mileage charge	Volume mileage charge	Revenue	Total cost per cwt.
A	1,000 lbs.	1.00	15.5	13.6	29.1	3.91	39.1
B	2,500	1.00	14.0	13.6	27.6	7.90	31.6
C	5,000	1.00	12.0	13.6	25.6	13.80	27.6
Total	8,500 lbs.					25.61	

While there are a variety of ways to alter hauling charges to benefit low-volume producers, we believe that equity is best served if member payments cover as closely as possible the costs they incur. We recognize, however, the psychological advantage of spreading a portion of stop charge costs into a volume charge with discounts for large volumes. When the stop charge is eliminated, however, producers with every day pickups are not paying for the extra burden of expense this places on the hauling system.

Earlier we referred to this system of milk hauling as being of a revolutionary nature. For the system to work, management of the cooperatives desiring to make a change must devise means of winning producers' and haulers' support for restructuring routes on a least-cost basis and for establishing a system of equitable rates.

Haulers as a group must be assured that route changes will be made for their economic benefit. If realistic average rates are established for services performed, haulers can work toward increased efficiency for their own benefit. Thus, both producers and haulers can benefit from reduced assembly and transport mileage from route reorganization, and from the use of larger trucks where possible.

Route changes would have to be orderly and equitable to current haulers. Management of AMPI or the participating cooperatives must assume a leadership role in establishing new efficient routes, but determination of who would be surviving haulers when routes are consolidated should be left to the haulers.

Once members and haulers are fully informed of the hauling and payment plans, complete implementation of producer and hauler payment schedules could be made over a short period--3 months perhaps. Route reorganization could occur over a longer period, area by area, as the staff completed arrangements for change in various areas.

Route reorganization to eliminate cross hauling and overlapping of routes to give haulers more economical routes should be the first step. Once overlapping is eliminated then route consolidation for the use of larger trucks can be made where possible. Perhaps this consolidation to larger trucks could be made less painful for haulers by waiting until present equipment wears out.

If initial producer payment schedules are used and economies in hauling are made, balances in the hauling payment pool will increase. Management should periodically review hauling costs and adjust schedules downwardly to reflect savings. This would help build member confidence in the hauling program.

We believe that a well planned program fully understood by producers and haulers will be successful. Once the system plan is implemented, it should be completed as quickly as possible.

FINDINGS AND RECOMMENDATIONS

This report analyzes milk hauling operations in the Indiana Federal Milk Marketing Order and for the Mid-States Region Board of Directors of Associated Milk Producers, Inc. It describes a system which can be used to equitably charge producers for hauling services and to pay haulers for their services. It also describes how the system offers a more coordinated milk hauling program than is now in use and the potential benefits to producers, cooperatives and haulers.

Findings

While cooperatives in recent years have rapidly adapted to changing milk marketing conditions through merger and assumption of more marketing functions, hauling largely remains unorganized and controlled by small trucking firms or handlers. This general lack of coordination has led to cross hauling and overlapping of bulk milk pick-up routes with resultant high hauling charges to producers and/or inadequate returns to handlers.

Recognizing that from ten to thirty percent of a producer's cash farm expenses are paid out for hauling, cooperatives are seeking means to increase hauling efficiency. Cooperatives should be able to lay out routes and designate delivery points in the interest of maximum efficiency and service to customers. Equally important, cooperatives need to assume closer control of hauling to be able to reroute supplies in support of bargaining efforts with handlers--a difficult task under present conditions of decentralized hauling responsibility.

To implement coordinated hauling, cooperatives must first design and put into practice a uniform schedule of equitable hauling rates that reflects each producers share of total milk hauling costs, along with a schedule of payments for haulers that reflects the relative costs of services they are assigned to perform.

Amounts paid by all producers on a given route do not need to equal amounts paid the hauler. Some producers may have to share the extra costs required to move surplus milk, not necessarily their own but produced in their area, to fluid outlets where needed. Likewise, haulers may be asked to temporarily move milk to different outlets in support of efforts to maximize fluid use of milk supplies at least cost to the cooperative as a whole.

During June and December approximately 4,400 producers in 101 counties in Indiana, Illinois, Ohio, and Michigan and 25 counties in Wisconsin supplied

301,115,379 pounds of milk to 40 dealers and 5 cooperatives regulated by the order. Fluid market outlets in Indianapolis provided about one-third of the Class I utilization in the order. Almost a fourth of the total milk supply was produced in Wisconsin.

A survey of 75 Indiana routes and a number of Wisconsin routes in 1971 provided the following milk hauling data:

Item	Indiana	Wisconsin
Average truck capacity, gallons	3,000	3,500
Average load volume, pounds	20,792	24,030
Average capacity used, percent	80.5	80.0
Average route length, miles	139.8	69
Average assembly miles per farm	7	3
Average farms per load	11.2	10
Average route time, minutes	473.7	325.2
Average time at a farm, less pump time, minutes	10	10

Using costs from sources in Indiana and research publications, we estimated the average daily cost of an Indiana route at $65.47. An average Wisconsin route averaged $50.75.

Distributing these costs on the basis of tasks performed by the hauler for producers provided the following functional costs:

	Indiana	Wisconsin
Stop charge costs, including on farm labor less pumping time, between farm labor, between farm truck operating costs, and share of fixed costs for labor and miles	$32.63	$18.63
Mileage costs including labor for transport miles, truck operating costs, and share of fixed costs for labor and mileage	19.59	16.38
Volume, including labor for on farm and plant pump time, waiting at plant, truck tank washing, and share of fixed costs for volume and labor time	13.25	15.74
Total costs	$65.47	$50.75

When these costs were allocated to stops, volume and mileage, the following basic producer hauling charges were obtained:

Item	Indiana	Wisconsin
Stop charge, per stop	$2.91	$1.86
Transport mileage costs, per mile, average distance	0.32	0.39
Volume costs, per cwt.	0.0637	0.0654

The system allows a producer the opportunity of paying a basic transport mileage charge for hauling to his closest fluid milk outlet, except where all producer supplies nearest this outlet are greater than the Class I needs plus an average amount of surplus based on the entire market percentage of surplus. Then all producers closest to such outlet would share the costs of moving the above average amount of surplus to the next closest fluid milk outlet needing milk for Class I purposes. Thus, all producers closest to outlets in southern Indiana would be charged an additional 2 cents per hundredweight. In the same manner Wisconsin producers would pay a local assembly charge plus an additional 36 cents per hundredweight on all milk produced.

Using the basic charges described above, a schedule of basic producer hauling rates for specified farm to market mileages was developed and shown as table 6. Table 4 in the report shows payments to haulers for specified total route mileage.

Adoption of this system of paying for hauling would involve a major undertaking for all cooperatives in the market. All organizations agreeing to adopt the system should organize a common hauling pool to receive producer payments. Hauler would be paid from the pool reflecting services they are asked to perform irrespective of the level of producer payments on an individual route. AMPI and other cooperatives must devise a way to win producer support for this new program and haulers need to be assured that they too can gain from a more efficient milk hauling program.

Recommendations

1. AMPI should discuss the proposed equitable charge and payment system with other groups supplying milk in the Indiana Order area.
2. If acceptable, a common hauling pool should be organized to receive and disburse hauling revenues.

3. Cooperatives should adopt producer charge and hauler payment schedules on an area by area basis over a few months period.

4. Once the schedules are in effect, using recommendations from the companion Purdue University report, routes can be reorganized on a more efficient basis.

5. As the need for hauler services lessens due to more efficient route organization and the use of larger trucks, average route costs should be reviewed with the objective of making appropriate reductions in producer charge schedules.

6. Not all cooperatives or producers in the market order area need to participate in this system to obtain improved efficiency. However, since haulers are paid largely on a route mile basis, all producers on a route must participate. To obtain significantly lower assembly costs, through route reorganization, all routes in an area should participate.

APPENDIX

MILK HAULER SURVEY, 1971

Indiana Division, AMPI

. Truck and Tank Information

1. Owner's name ______________________ Address ________________

2. Make ______________________ Model year ______________
(Ford, Chevy, etc.)

3. Number of axles ____________ Kind of fuel used ______________

4. Type of truck _________ Straight; _________ Semi; _________ Tandem

5. Truck tank cap. ________ gals.; milk pump cap. ____________ gals./min.

6. Weight of truck and tank ________ lbs. Legal weight limit ________ lbs.
(empty)

7. Number of routes (loads) __________ first day __________ second day

. Route Information for First Day

1. Route identification ______________________ Date ____________
(Name or number)

2. Driver's name ____________________________

3. Route miles ________________ first load ____________ second load

4. Route time ________________ first load ____________ second load
(hrs. and min.) (hrs. and min.)

5. Number of farm stops (pick-ups) ________ first load ________ second load

6. Number of farms on daily pick-up ________ first load ________ second load

7. Amount of milk delivered __________ first load __________ second load
(pounds) (pounds)

8. Kind of roads (Divide total route miles into three types as follows)

   a. First load ________ Gravel ________ Paved ________ Congested city
   (miles) (miles) (miles)

   b. Second load ________ Gravel ________ Paved ________ Congested city
   (miles) (miles) (miles)

9. Describe unusual conditions of driveway, gates, access to milkhouse, etc.

____

____

Route Information for Second Day

1. Route identification ____________ (Name or number) Date ____________

2. Driver's name ____________

3. Route miles ____________ first load ____________ second load

4. Route time ____________ (hrs. and min.) first load ____________ (hrs. and min.) second load

5. Number of farm stops (pick-ups) ________ first load ________ second load

6. Number of farms on daily pick-up ________ first load ________ second load

7. Amount of milk delivered ____________ (pounds) first load ____________ (pounds) second load

8. Kind of roads (Divide total route miles into three types as follows)

   a. First load ________ (miles) Gravel ________ (miles) Paved ________ (miles) Congested city

   b. Second load ________ (miles) Gravel ________ (miles) Paved ________ (miles) Congested city

9. Describe unusual conditions of driveway, gates, access to milkhouse, etc.

____

____

____

AMPI member information (To be completed by AMPI staff)

1. Number of AMPI members ____________ first load ____________ second load

2. Amount of member milk ____________ (pounds) first load ____________ (pounds) second load

MILK ROUTE SURVEY, 1971

Indiana Division, AMPI

I. Truck and Tank Information

1. Owner's name ____________________ Address ____________________
2. Make ____________________ Model year ____________________
   (Ford, Chevy, etc.)
3. Number of axles ____________________ Kind of fuel used ______________
4. Type of truck ____________ Straight; ____________ Semi; ____________ Tandem
5. Truck tank capacity __________ gallons milk pump cap. __________ gals./min.
6. Weight of truck and tank (empty) ________ lbs. Legal weight ________ lbs.
7. Number of routes (loads ____________ first day ____________ second day
8. Other observations relative to truck and/or tank

   ____

   ____

II. Route Information for First Day

1. Route identification ____________ first load ____________ second load
   (name or number) (name or number)
2. Driver's name ______________________________
3. Time trip started ____________ Complete speedometer reading ____________
4. Kind of roads (may use part speedometer reading (00.0)

Gravel			Paved			Congested City		
Begin	End	Miles	Begin	End	Miles	Begin	End	Miles

5. Complete milk route assembly information on attached sheets.

6. Plant delivery information (first load).

   a. Time arrived at plant __________ Complete speedometer reading _________

   b. Name of plant ______________________ Location _________________________
   (City and State)

   c. Amount of milk delivered _______________________ lbs.

   d. Unloading time: Beginning ________________ Ending ____________________

   e. Clean-up time: Beginning _________________ Ending ____________________

   f. Time left plant ___________________________

   g. If one load (trip) for day, show time of arrival at point of origin ______________________. If a second load is delivered, complete farm assembly information on attached sheets.

7. Plant delivery information (second load).

   a. Time arrived at plant __________ Complete speedometer reading ________

   b. Name of plant ______________________ Location _________________________
   (City and State)

   c. Amount of milk delivered ____________________________ lbs.

   d. Unloading time: Beginning ________________ Ending ____________________

   e. Clean-up time: Beginning _________________ Ending ____________________

   f. Time left plant ___________________________

   g. Time of arrival at point of origin ____________________________________

Route Information for Second Day

1. Route identification _______________ first load ________________second load

2. Driver's name ____

3. Time trip started _________________ Complete speedometer reading __________

4. Kind of roads (may use part speedometer reading (00.0)

Gravel			Paved			Congested City		
Begin	End	Miles	Begin	End	Miles	Begin	End	Miles

5. Complete milk route assembly information on attached sheets.

6. Plant delivery information (first load).

a. Time arrived at plant __________ Complete speedometer reading __________

b. Name of plant ______________________ Location ________________________
(City and State)

c. Amount of milk delivered _________________________ lbs.

d. Unloading time: Beginning _______________ Ending ____________________

e. Clean-up time: Beginning ________________ Ending ____________________

f. Time left plant __________________________

g. If one load (trip) for day, show time of arrival at point of origin ___________________. If a second load is delivered, complete farm assembly information on attached sheets.

7. Plant delivery information (second load).

a. Time arrived at plant ___________ Complete speedometer reading ________

b. Name of plant ____________________ Location __________________________
(City and State)

c. Amount of milk delivered ________________________ lbs.

d. Unloading time: Beginning _______________ Ending ____________________

e. Clean-up time: Beginning _______________ Ending ____________________

f. Time left plant _________________________

g. Time of arrival at point of origin ___________________________________

MILK ROUTE ASSEMBLY INFORMATION (cont'd)

Date ____________ Route ________________ Load ________________ Data taken by ________________
Name or number
Name

Item	9th Farm	10th Farm	11th Farm	12th Farm	13th Farm	14th Farm	15th Farm	16th Farm
Time truck entered farm drive								
Speedometer reading at drive								
Time truck stopped at milkhouse								
Pounds of milk picked up								
Time pump started								
Time pump stopped								
Capacity of farm tank (gallons)								
Number of milkings in tank								
Member of AMPI (yes or no)								
Health permit number								
Time truck left farm drive								
Speedometer reading at drive								

Time out for meals ____________ Minutes Time out for gas, etc. ____________ Minutes Time out for other (specify) ____________ Minutes

Describe observations of unusual conditions of driveways, gates, access to milkhouse and other items related to farm conditions. Identify by farm where appropriate. Use back of sheet if necessary.